~~**Patent Claims:**~~

~~1. Block copolymer containing~~
~~a hydrophobic biodegradable polymer,~~
~~a hydrophilic polymer,~~
~~at least one reactive group for covalent binding of a surface-modifying substance d) to the hydrophilic polymer b),~~
~~wherein the at least one reactive group c) is selected from 1) a functional group and/or 2) an at least bifunctional molecule with at least one free functional group with the provision that if the hydrophilic polymer b) is polyethylene glycol, the reactive group c) is not hydroxyl.~~

~~2. Block copolymer according to Claim 1,~~
~~characterised in that~~
~~the hydrophobic polymer a) and/or hydrophilic polymer b) are selected from a linear and/or branched polymer.~~

~~3. Block copolymer according to one of the preceding claims,~~
~~characterised in that~~
~~the hydrophobic polymer a) is at least one polymer selected from polyester, poly-e-caprolactam, poly-a-hydroxyester, poly-b-hydroxyester, polyamide, polyphosphazene, polyanhydride, polydioxanon, polymalic acid, polytartaric acid, polyorthoester, polycarbonate, peptide, polysaccharide and protein.~~

~~4. Block copolymer according to Claim 3,~~
~~characterised in that~~
~~the hydrophobic polymer a) is at least one polymer selected from polylactide, polyglycolide, poly(lactide-co-glycolide), poly-b-hydroxybutyrate and poly-b-hydroxyvalerate.~~

~~5. Block copolymer according to one of the preceding claims, characterised in that the hydrophilic polymer b) is at least one polymer selected from polyethylene glycol, polypropylene glycol, polyethylene glycol/polypropylene glycol copolymer, polyethylene glycol/polypropylene glycol/polyethylene glycol copolymer, polybutylene glycol, polyacrylamide, polyvinyl alcohol, polysaccharide, peptide and protein.~~

~~6. Block copolymer according to one of the preceding claims, characterised in that the reactive group c) is at least one selected from an amino group, thiol, carboxylic acid, keto group, an acid chloride, dicarboxylic acid amide, 3-maleic imidopropionic acid-N-succinimidyl ester and succinimidyl ester.~~

~~7. Block copolymer according to one of the preceding claims, characterised in that the hydrophobic polymer a) is at least one selected from polylactide, polyglycolide and poly(lactide-co-glycolide).~~

~~8. Block copolymer according to Claim 7, characterised in that the hydrophilic polymer b) is polyethylene glycol.~~

~~9. Block copolymer according to Claim 8, characterised in that the polyethylene glycol has a molar mass in a range of 200 to 10 000 Da.~~

~~10. Block copolymer according to one of the preceding claims, characterised in that the hydrophobic polymer a) is polylactide preferably with a molar mass in a range of 1 000 to 100 000 Da.~~

~~11. Block copolymer according to one of the preceding claims, characterised in that the surface of the block copolymer is chemically structured by binding of surface-modifying substances d).~~

~~12. Block copolymer according to one of Claims 1 to 11, characterised in that the block copolymer additionally contains at least one surface-modifying substance d), wherein substance d) is bonded to the hydrophilic polymer b) by means of the reactive group c).~~

~~13. Block copolymer according to Claim 12, characterised in that the substance d) is at least one substance selected from a carbohydrate, peptide, protein, heteroglycan, proteo-glycan, glycoprotein, amino acid, fat, phospholipid, glycolipid, lipoprotein, medicinal agent, antibody, enzyme, DNA/RNA, a cell, dye and molecular sensor.~~

~~14. Shaped body formed from a block copolymer according to one of Claims 1 to 13.~~

~~15. Shaped body according to Claim 14, characterised in that the shaped body is a film, particle, three-dimensional body, porous body or a sponge.~~

~~16. Use of a block copolymer according to one of Claims 1 to 15 for the production of drug-targeting systems, drug-delivery-systems, bioreactors, for therapeutic and diagnostic purposes, for tissue engineering and as emulsifier.~~

~~17. Process for the production of a block copolymer according to one of Claims 12 or 13, characterised in that the at least one substance d) is converted with a block copolymer according to one of Claims 1 to 11, wherein the block copolymer is present in solution or in the solid phase.~~

~~18. Process according to Claim 17, characterised in that for binding the at least one substance d), the block copolymer according to one of Claims 1 to 11 is used in the form of a porous shaped body.~~

~~19. Process for the production of a block copolymer according to one of Claims 12 or 13 or according to one of Claims 17 or 18, characterised in that in a first stage, the substance d) is provided with a reactive group e) and in a second stage, the complex composed of substance d) and reactive group e) is bonded by means of the reactive group e) to the hydrophilic polymer b) of a block copolymer composed of a hydrophobic polymer a) and a hydrophilic polymer b).~~

~~20. Process for the production of a block copolymer according to one of Claims 12 or 13 or according to one of Claims 17 to 19, characterised in that —~~

~~the binding of the at least one substance d) to the surface of the block co-polymer is achieved by generating a substrate pattern.~~

~~21. Process according to Claim 20, characterised in that the substance d) is applied with a locally constant or variable concentration by means of the reactive group c) on the surface of a block copolymer containing a hydrophobic component a) and hydrophilic component b).~~

~~22. Process according to Claim 20 or 21, characterised in that for binding the reactive group c) and/or the substance d) in a substrate pattern, the surface of the block copolymer is structured by a plotter, an ink jet printer, radiation with light, bombardment with particles, stamping or soft lithography.~~

~~Figures~~

~~Abb. = Abbildung = Figure~~

~~Figure 2~~

~~bioabbaubares Polymer = biodegradable polymer~~

~~nicht bioabbaubares bzw. langsam bioabbaubares Polymer = non-biodegradable or slowly biodegradable polymer~~

~~Bindeglied = binding link~~

~~Oberflächenmodifizierende Substanz = surface-modifying substance~~

Figure 5

Foetales Rinderserum = foetal cow serum

Bindung = bond

Figure 6a

Atriales Natriuretisches

Peptid = atrial natriuretic peptide

Bindung = bond

Figure 6b

Lachs - Calcitonin = salmon - calcitonin

Figure 7

nach .. Stunden = after .. hours

Figure 9

Farbstoffmenge = amount of dye

Figure 10

aktives Polymer = active polymer

Glas = glass